CLAIM

1. A process for producing a peptide having a desired biological activity, comprising the steps of:

(1) culturing cells transformed with an expression vector having the nucleotide sequence encoding a peptide of interest that has a helper peptide added thereto, or a fusion protein that has a protective peptide further added to the peptide of interest that has a helper peptide added thereto; and then harvesting said peptide of interest that has a helper peptide added thereto or said fusion protein from said culture;

(2) in the case wherein a fusion protein is obtained in step (1), cleaving off from said fusion protein the peptide of interest that has a helper peptide added thereto and the protective peptide, and purifying the peptide of interest that has a helper peptide added thereto as desired;

(3) in the case wherein modification is required for the peptide of interest, subjecting the peptide of interest that has a helper peptide added thereto obtained in step (1) or step (2) to a modification reaction;

(4) cleaving off from the peptide of interest that has a helper peptide added thereto obtained in step (1), step (2) or step (3), the helper peptide and the peptide of interest, and purifying the peptide of interest as desired; and

(5) purifying the peptide of interest obtained in step (4).

2. The process according to claim 1, wherein said helper peptide has 5 to 50 amino acid residues.

3. The process according to claim 1 ~~or 2~~, wherein said peptide of interest having a helper peptide added thereto has an isoelectric point of 8 to 12.

4. The process according to ~~any of claims 1 to 3~~ claim 1, wherein said peptide of interest has not more than 200 amino acid residues.

5. The process according to ~~any of claims 1 to 4~~ claim 1, wherein said protective peptide has 30 to 200 amino acid residues.

6. The process according to ~~any of claims 1 to 5~~ claim 1, wherein an ion exchange resin is used in the purification process.

7. The process according to claim 6, wherein said ion exchange resin is a cation exchange resin.

8. The process according to ~~any of claims 1 to 5~~ claim 1, wherein a reverse phase chromatography or a hydrophobic chromatography is used in the purification process.

9. The process according to ~~any of claims 1 to 8~~ claim 1, wherein a surfactant and/or a salt are added in at least one of steps (1) to (5) to maintain the solubility of the peptide of interest.

10. The process according to ~~any of claims 1 to 9~~ claim 1, wherein the host cell is a prokaryotic cell or a eukaryotic cell.

11. The process according to claim 10, wherein the host cell is Escherichia coli.

12. The process according to ~~any of claims 1 to 11~~ claim 1, wherein the isoelectric point of the peptide of interest having a helper peptide added thereto is 8 to 12.

13. The process according to ~~any of claims 1 to 11~~ claim 1, wherein the peptide of interest is an amidated peptide.

14. The process according to ~~any of claims 1 to 11~~ claim 1, wherein the peptide of interest is a GLP-1 derivative having an insulinotropic activity.

15. The process according to claim 14, wherein the GLP-1 derivative having an insulinotropic activity that has a helper peptide added thereto has an isoelectric point of 8 to 12.

16. The process according to claim 14 ~~or 15~~, wherein the GLP-1 derivative having an insulinotropic activity has an isoelectric point of 4.5 to 9.0.

17. The process according to claim 14 ~~or 15~~, wherein the GLP-1 derivative having an insulinotropic

activity has an isoelectric point of 5.5 to 7.5.

18. The process according to claim 12 ~~any of claims 12 to 17~~, wherein an ion exchange resin is used in the purification process.

19. The process according to claim 18, wherein said ion exchange resin is a cation exchange resin.

20. The process according to claim 12 ~~any of claims 12 to 17~~, wherein a reverse phase chromatography or a hydrophobic chromatography is used in the purification process.

21. The process according to claim 12 ~~any of claims 12 to 17~~, wherein a surfactant and/or a salt is added to maintain the solubility of the peptide of interest.

22. The process according to claim 14 ~~any of claims 14 to 21~~, wherein the purity of the GLP-1 derivative obtained having an insulinotropic activity is 98% or greater.

23. The process according to claim 1 ~~any of claims 1 to 22~~, wherein the content of endotoxin in the final purified product is not greater than 0.03 units/mg.

24. A pharmaceutical composition for treatment of diabetes mellitus comprising as an active ingredient a GLP-1 derivative having an insulinotropic activity, obtained from the process according to claim 14 ~~any of claims 14 to 23~~.

25. An expression vector comprising a nucleotide sequence encoding a peptide of interest that has a helper peptide added thereto, or a fusion protein that has a protective peptide further added to the peptide of interest that has a helper peptide added thereto.

26. A prokaryotic or a eukaryotic cell transformed with an expression vector comprising a nucleotide sequence encoding a peptide of interest that has a helper peptide added thereto, or a fusion protein that has a protective peptide further added to the peptide of interest that has a helper peptide added thereto.

27. The cell according to claim 26, wherein the host cell is Escherichia coli.

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